Space Weather Forecast

Issued on Friday, 02 June 2023 at 01:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Isolated R1/R2 radio blackouts likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the last 24 hours, with numerous Common class flares, the largest of which was from a region which has since rotated off behind the western limb. After this most of the Common class flares originated an apparently magnetically complex region in the southeast, which is still rotating further into view. Two other regions in the southwestern quadrant are also magnetically complex. Most remaining regions out of the total of 9 numbered sunspot groups, and also the yet to be numbered region near centre disc, are small and weak, fading or stable. No Earth-directed CMEs were observed on available imagery during the period.

Solar Wind / Geomagnetic Activity: Solar winds have slowly risen from ambient to slightly elevated levels due to the connection of the Earth's magnetic field with a high speed solar wind. Total magnetic field strength was mainly weak, but briefly reached moderate levels due to this connection early on 01 June. The north-south component varied weakly, but reached a brief moderate negative peak due to the onset of the high speed solar wind. Geomagnetic activity was Quiet to Unsettled, with one early Active interval.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be generally Low with isolated Moderate class flares likely, and a slight chance of High levels. Any significant flares are most likely to originate from the complex region in the southeast, with possible contributions from two complex but apparently stable regions in the southwest quadrant, before one rotates off behind the west limb. This region is expected to be replaced by new or returning regions rotating onto the visible disc later in the forecast period.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs currently feature in the forecast. A weak solar wind enhancement from a coronal hole is currently affecting the Earth, with a further weak connection to a smaller coronal hole possibly arriving tomorrow, potentially pushing the solar wind speeds to around 500 km/s. The high speed streams may then start to decline later on 04 June. Geomagnetic activity is expected to be Quiet to Unsettled, with a chance of isolated Active intervals and a slight chance of Minor Storms in any notable periods of negative Bz. Day 4 (5th June) predominantly Quiet geomagnetic activity is expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur, but there is a slight chance of reaching the Minor Storm threshold should any larger flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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